



Australian Government

UEEDV0005 Install and maintain cabling for multiple access to telecommunication services

Release: 2

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Modification History

Release 2. This minor update is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Errors that don't impact unit outcomes in the Range of Conditions, Performance and Knowledge Evidence were corrected.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to install and maintain telecommunications cabling in buildings and premises.

It includes working to relevant regulations, legislation, codes of practice and industry standards and to Australian Communications and Media Authority's (ACMA) Telecommunications Cabling Provider Rules; installing multiple telecommunication lines for multiple access to telecommunication services; terminating at telecommunication outlets, termination modules and distributors; testing for compliance and completing cabling documentation.

This unit applies to customer cabling terminated on distributors and to the installation, maintenance and modification of indoor, external, underground cabling and customer cabling and may be used to connect devices for a range of applications, including telecommunications phones, data (video and multimedia) and security (alarms and fire protection).

Work functions in the occupational areas where this unit may be used are subject to regulatory requirements. Refer to the UEE Electrotechnology Training Package Companion Volume Implementation Guide or the relevant regulator for specific guidance on requirements.

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

AND

UEECD0043 Solve problems in direct current circuits

OR

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Data and Voice

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to install and maintain cabling

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are identified and applied
- 1.2** Hazards are identified, risks are assessed and control measures and workplace procedures are implemented
- 1.3** Nature and location of the work is determined from documentation or relevant person/s to determine scope of work to be undertaken
- 1.4** Cable routes are planned within the constraints of the building structure and in accordance with relevant regulations, legislation, codes of practice and industry standards
- 1.5** Earthing requirements are determined in accordance with existing earthing arrangements, where applicable, and cable system, earth upper and lower resistance limitations
- 1.6** Advice is sought from relevant person/s to ensure work is coordinated effectively with others
- 1.7** Materials required for the work are obtained in accordance with workplace procedures
- 1.8** Tools, equipment and testing devices required for the

		work are obtained and checked for correct operation and safety in accordance with workplace procedures
2 Install and maintain cabling	2.1	WHS/OHS risk control measures and workplace procedures for carrying out the work are followed
	2.2	Installed support structure is checked for compliance to ensure cable will not be exposed to damage during installation and general operation
	2.3	Catenary supports are secured to building structure and tensioned, as required, to ensure cable weight can be carried in operating conditions, with interference and safety segregation maintained in accordance with relevant regulations, legislation, codes and standards
	2.4	Protective earthing of metal work is installed in accordance with job requirements and industry standards
	2.5	Cables/wires are installed in accordance with manufacturer application, tension and bending stress requirement specifications
	2.6	Sufficient cable excess is allowed at cable ends to facilitate termination in accordance with workplace procedures
	2.7	Cable ends terminating at a telecommunication outlet are labelled in accordance with industry standards
	2.8	Cable is placed and secured to maintain safety and interference segregation in accordance with legislative and industry standards
	2.9	Cable ties are tightened correctly and safely in accordance with workplace procedures and industry standards
	2.10	Customer cabling is installed in accordance with relevant regulations, codes of practice and industry standards
	2.11	Surge suppression devices are fitted to all cable pairs as required with the devices protectively earthed in accordance with relevant regulations, codes of practice and industry standards
	2.12	Telecommunications reference conductor (TRC)/communications earth system (CES)/protective earth (PE) insulation is protected against damage and TRC/CES and PE are segregated in accordance with

- relevant regulations, codes of practice and industry standards
- 2.13** Cabling is installed without waste of materials and energy or damage to apparatus, the surrounding environment or services using sustainable energy practices
- 2.14** Regular quality checks are conducted in accordance with workplace procedures to ensure cabling complies with requirements
- 3 Terminate, inspect and test cables and earth wires**
- 3.1** WHS/OHS risk control work measures and workplace procedures for carrying out work are followed
- 3.2** Cable sheath is removed to allow for correct termination length and without damage to underlying conductors and their insulation
- 3.3** Terminating modules are installed in accordance with manufacturer specifications and cable pairs neatly and sequentially fanned for termination
- 3.4** Conductors are terminated in accordance with recommended colour code sequence and using relevant termination tools in accordance with manufacturer guidelines and operating instructions
- 3.5** Cable shields are earthed, as required, in accordance with manufacturer specifications, relevant regulations, codes of practice and industry standards
- 3.6** Visual inspection is undertaken prior to end-to-end testing of wire and pair termination integrity to confirm termination colour code sequence has been followed
- 3.7** Cable pairs are tested and clearly labelled to provide accurate identification in accordance with job requirements and workplace procedures
- 3.8** TRC/CES/PE are terminated with connectors in accordance with manufacturer specifications, relevant industry codes of practice and industry standards
- 3.9** TRC/CES/PE wire continuity is maintained in accordance with workplace procedures and interface requirements with electrical systems are followed
- 3.10** TRC/CES/PE installation is tested for continuity insulation resistance and conductive resistance in

accordance with relevant industry standards

- 3.11** Earthing system is labelled in accordance with job requirements and workplace procedures
- 3.12** New work is tested both in isolation and when integrated with existing systems, and compatibility of alterations with existing systems is confirmed
- 3.13** Cabling is terminated without waste of materials and energy or damage to apparatus, the surrounding environment or services
- 3.14** Regular quality checks are conducted and any defects rectified to ensure cabling complies with requirements

4 Complete cabling work records and reporting

- 4.1** WHS/OHS risk control measures and procedures for work completion are followed
- 4.2** Worksite is cleaned and made safe in accordance with workplace procedures
- 4.3** Record sheets, plans of cable location type and infrastructure are accurately created or updated and stored in accordance with customer requirements and workplace procedures
- 4.4** Cable pair record books are created or updated to provide an accurate record of pair locations, inter-connections and usage in accordance with relevant regulations, codes of practice and industry standards
- 4.5** Telecommunications cabling advice (TCA 1) is documented and reported in accordance with requirements and workplace procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Cable laying and connecting to larger commercial and industry installations must include:

Terminating systems at both distributor and outlet locations must include:

- multi-pair cables
- multi-story buildings
- termination modules and distributors
- two jumperable distributors with one having a capacity of 100 pair or greater
- a cable in excess of 20 pair and a 4 pair

Unit Mapping Information

This unit replaces and is equivalent to UEENEEF102A Install and maintain cabling for multiple access to telecommunication services.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEDV0005 Install and maintain cabling for multiple access to telecommunication services

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - applying safe working practices
 - using risk control measures
- accessing and interpreting telecommunication systems diagrams
- planning cable route within building constraints
- checking tools, equipment and testing devices for correct operation and safety
- laying and connecting cables for multiple access to telecommunication services, including:
 - terminating cabling at both distributor and outlet locations with one cable being greater than 20prs, one cable of 20pr or less and one 4pr cable installing and terminating two jumperable distributors with a capacity of 100 pair or greater
 - allowing excess cable to terminate
 - labelling outlet ends in accordance with industry standards
 - securing cables in accordance with industry standards
 - reading and interpreting drawings related to cable layouts, outlet location, cable coding system, identifiers and distributor locations
 - installing and termination a network termination device (NTD)
- determining earthing requirements and earthing conductors within resistance limitations
- segregating and protecting telecommunications reference conductors (TRC)/communications earth systems (CES)/protective earth (PE) wires against damage
- installing surge suppression devices
- completing documentation in accordance with industry standards and telecommunications carrier requirements
- terminating and testing cables

- commissioning a telecommunications cabling system.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- customer interfaces, devices and system distribution
- installation and termination requirements, including:
 - Australian Communications and Media Authority (ACMA) regulations and requirements
 - technical standards
 - relevant manufacturer specifications
 - compliance with current Australian Standards, including AS/CA S009 Installation requirements for customer cabling (Wiring Rules)
- Cabling Provider Rules, including:
 - cabling registrars, auditors and inspectors
 - mandatory and voluntary requirements for cabling work
 - registration
- general installation requirements, including:
 - Cabling Provider Rules requirements
 - earth potential rise
 - catenary cabling systems
 - optical fibre and coaxial cabling systems
 - conduits
- cable distribution devices, including:
 - cable distribution devices
 - clearances
 - general requirement
- network boundaries, including:
 - terminations
 - hazards
 - regulations
- indoor cabling, including:
 - general requirements for indoor cabling
 - required minimum clearances
 - damp situations
 - cables in lift and hoist shafts
- underground cabling, including:
 - requirements for underground cabling
 - minimum depth cover

- protection of underground cabling
- segregation from other services
- aerial cabling, including:
 - requirements for aerial cabling
 - minimum clearances
 - segregation requirements
- earthing protection, including:
 - earthing requirements
 - function of earthing
 - TRC/CES/PE purposes
 - TRC/CES earthing installation tests
 - earthing systems
 - earthing of equipment
 - equipotential bonding
- surge suppression and system purpose, types and operation
- miscellaneous regulations, including:
 - cabling in heritage buildings
 - cabling in public places
 - cabling in hazardous areas
- cable identification, including:
 - plans and drawing
 - labelling
 - documentation
- telecommunication cable types including:
 - construction
 - transmission characteristics
 - applications
- cable installation, including:
 - hazards
 - cable damage prevention
 - cable dispensers
 - cable enclosures
 - types
 - fixing
 - regulations
 - distribution boxes and back mounts
- techniques for general cable installation, including:
 - correct cable length for termination
 - cable identification and labelling
 - unique label outlet ends of cable match identifier

- cable damage prevention
- fixing of cables to support stems
- maintaining ground clearance and hazardous clearances
- techniques to terminate and test, including:
 - removal of cable sheath
 - install terminating modules
 - terminate conductors
 - termination boundaries
- earthing concepts, including:
 - earthing cable shield
 - testing
 - earth of metallic barriers
 - purpose of earth testing instruments
 - earth potential rise
 - earthing test procedures
 - interpretation of results
- cable shielding and interference, including:
 - electromagnetic interference (EMI)/radio frequency interference (RFI) principles
 - sources
 - reduction techniques
 - earthing cable shields
 - interference segregation
- end-to-end testing, including:
 - pair termination integrity
 - cable pairs labelling
 - surge suppression devices
- hazards, including:
 - electronic components and circuits
 - printed circuit boards
 - physical
 - static discharge
 - chemical.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- two jumperable distributors with a capacity of 100 pair or greater
- a cable in excess of 20 pair, a cable of 20 pair or less and a 4 pair
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

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